REMARKS

In this Amendment and Response, a substitute Declaration has been submitted, as requested in paragraph 1 of the Office Action; grammatical mistakes have been corrected in the Specification; and:

Claims 2 to 13 and 20 to 26 are pending as originally filed; and

Claim 1 has been amended to improve grammar, and claims 14 to 19 have been amended to satisfy formal requirements for use claims.

A. Amendment of the Specifiction

Grammatical, non-substantive corrections have been made in the Specification.

B. Amendment of the Claims

Claim 1 has been amended for grammatical reasons, and claims 14 to 19 have been amended as suggested in paragraph 2 of the Office Action to satisfy formal requirements of use claims.

C. Rejection under 35 U.S.C. § 102(b)

Claims 1 to 26 have been rejected under 35 U.S.C. § 102(b) as being anticipated by "the art of record".

As to Claims 1 to 26, the Examiner asserts in paragraph 4 of the Office Action that:

"The references discloses [sic] the utilization of sonar systems utilizing

transmission signals and processing **similar** to that utilized by dolphins as recited

in the aforementioned claims." (emphasis added)

The anticipation rejection cannot stand because the cited references do not teach every element of Applicants' invention

"To anticipate a claim, the reference must teach every element of the claim." MPEP 2131 (original text capitalized)

To conclude that the "the art of record" anticipates Applicants' invention, the Examiner has incorrectly asserted that journal articles about dolphin whistles and echolocation clicks have disclosed Applicants' invention. Although Applicants' invention is modeled on dolphin

echolocation, none of the art of record discloses Applicants' invention. "Similarity" is not anticipation. Applicants' invention involves, among other elements:

- Left and Right Cochlear Processors
- Left and Right Envelope Processors
- A Shape from Latency Processor
- An Object Recognition Processor
- A Stereausis Processor

None of the references discloses the preceding elements of Applicants' invention. The Examiner has not referred to any particular references, or portions thereof, that disclose, much less enable, the elements of Applicants' invention. To anticipate Applicants' invention, a reference must disclose and enable all the elements of Applicants' invention. Therefore, none of the references anticipates Applicants' invention.

What do the references disclose? Tyack, et al., in "Time-Frequency Fine Structure of Dolphin Whistles," analyze dolphin whistles. Whistles are communicative. Echolocation clicks are perceptual tools that provide sensory information to the dolphin about objects in its environment. Applicants' invention is about echolocation, not communication. The structure of dolphin whistles has absolutely nothing to do with dolphin echolocation. The reference does not disclose a single element of Applicants' invention.

Houser, et al., in "Creation of a biomimetic model of dolphin hearing through the use of evolutionary computation," describe a method, evolutionary computation, that automatically compares randomly generated models, progressively moving toward the most effective one. The authors of the reference used this evolutionary procedure to choose a version of constant Q filter that best replicated the audiogram of the dolphin. Applicants do not claim a type of filter, but an engineered system that can mimic the ability of the dolphin to detect and perceive objects underwater. The reference does not disclose a single significant element of Applicants' invention, much less the full invention.

Dubrovsky, et al., in "A simulation network of first order auditory neurons for preprocessing of acoustic signals," describe an alternative to the Meddis model that the Applicants use to model the output of cochlear hair cells. Like filtering, modeling neural output is one of the background arts in designing a biomimetic sonar, just as filtering and modeling transmitter output is part of

designing a radar, but such theories of filtering and modeling are not a complete radar system, or even one of its structural elements.

Kuc, in "Fusing binaural sonar information for object recognition," describes a binaural receiver that can classify symmetrical objects as they pass in front of the detector. The reference discloses the well-known elements of a robotic three-translation axis, two rotational axis, manufacturing controller. However, the disclosed system can recognize only a single, isolated, and symmetrical washer, O-ring, or ball bearing. The reference does not disclose a cochlear processor, an envelope processor, a shape from latency processor, or a stereausis processor ... all of which are elements of Applicants' invention.

Roitblat, et al., in "Dolphin Echolocation: identification of returning echoes using a counter-propagation network," describe a very different neural network system that combines information from multiple successive echoes. This study was part of Applicants' basic research on building a computational model of echolocation. The reference does not disclose a cochlear processor, an envelope processor, a shape from latency processor, an object recognition processor, or a stereausis processor ... all of which are elements of Applicants' invention.

Nachtigall, et al., in "Animal Echolocation and Signal Processing," introduce the concept of using neural networks as an alternative to filtering received signals. Again, this study was part of Applicants' basic research on building a computational model of echolocation. The reference does not disclose a cochlear processor, an envelope processor, a shape from latency processor, an object recognition processor, or a stereausis processor ... all of which are elements of Applicants' invention.

In summary, the art of record surveys various analyses of the time, frequency, and amplitude domains of dolphin whistles and clicks, and one reference describes a binaural manufacturing controller, but none of the references teaches a biomimetic sonar system identical, or even similar, to Applicants' invention.

The anticipation rejection cannot stand because the cited references fail to meet the burden imposed by case law for rejections under Section 102(b)

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, **in a single prior art reference**." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). (emphasis added) "The **identical invention** must be shown in as complete detail as is contained in the ... claim."
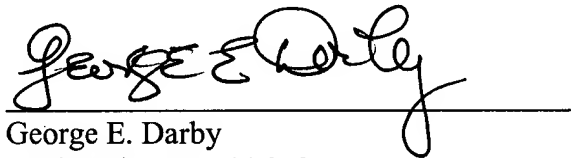
Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). (emphasis added) No single reference cited by the Examiner contains, expressly or inherently, "each and every element as set forth in the claim". Therefore, none of the cited references anticipate Applicants' invention under Section 102(b).

Conclusion

Applicants have provided a substitute Declaration, amended claims 1 and 14 to 19, and respectfully submit that the anticipation rejection is improper and should be withdrawn in light of the Remarks above. All pending claims are allowable, and Applicants respectfully solicit an early notice to that effect. The Examiner is invited to contact Applicants' undersigned representative if there are any questions relating to the subject application.

Respectfully submitted,

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